

WHAT IS CLAIMED:

1. An apparatus for manufacturing a soot preform for an optical fiber by depositing glass particles generated through a flame hydrolysis reaction of raw material gases onto a starting rod being rotated and pulled up, the apparatus comprising:

5 a reaction chamber in which said glass particles are deposited over the starting rod to thereby render the starting rod into a soot preform;

an upper room located on top of said reaction chamber, for housing the soot preform being pulled up;

at least one core deposition burner disposed to open in the reaction chamber;

10 a horizontally extending slit made in that wall of the reaction chamber which is closest to said core deposition burner, at a location slightly underneath a ceiling of said reaction chamber, said slit being adapted to pass gas into said reaction chamber; and

a gas exit made in that wall of the reaction chamber which is opposed to the wall having said slit.

15 2. The apparatus of claim 1, further comprising at least one clad deposition burner.

3. The apparatus of claim 1, wherein a horizontal length of said slit is at least 75% of the width of said reaction chamber as measured in parallel with said slit.

20 4. The apparatus of claim 1, wherein said gas exit is substantially rectangular, and the distance between a top side of the gas exit and the ceiling of the reaction chamber is 50 mm or less.

5 The apparatus of claim 1, wherein the horizontal length of said gas exit is at least 75% of the width of said reaction chamber as measured in parallel with said slit.

6. A method of manufacturing a soot preform for an optical fiber using the

apparatus of claims 1, wherein a velocity of the gases passing through said slit is set between 3 m/sec and 20 m/sec.

7 A method of claim 6, wherein passing of a gas through said slit is caused by forced exhaustion of gas through said gas exit, and the gas passed through said slit is a prepared gas.

8. The method of claim 7, wherein said prepared gas is an atmospheric air passed through a dust-tight filter.

9 The method of claim 7, wherein said prepared gas is air in a clean room of class 10000 or better.

10 10. The apparatus of claim 1, wherein said upper room is substantially cylindrical.

11. A method of manufacturing a soot preform for an optical fiber using the apparatus of claim 10, wherein a downward gas flow is maintained to flow from the upper part of said upper room toward the reaction chamber at a velocity of 0.05 m/sec or greater.

12. The apparatus of claim 1, wherein the floor of said reaction chamber is formed with a raised floor having a height higher than the core deposition position, and the raised floor is formed at the foot of that wall of the reaction chamber which has the gas exit.

20 13. The apparatus of claim 1, wherein said reaction chamber is divided by a horizontal partition into an upper reaction chamber having said slit and said gas exit and a lower reaction chamber, and a connect hole is made in the bottom of said upper reaction chamber for communicating the upper and lower reaction chambers with each other, and said lower reaction chamber has substantially no exhaust hole except this

connect hole.

14. The apparatus of claim 13, wherein said connect hole is a circle in shape having a radius which is 45-55 mm greater than the radius of that part of the soot preform, which is concentrically passing through said connect hole.

5 15. The apparatus of claim 13, wherein said connect hole consists of a void in the shape of a semicircle of which the center substantially coincides with a rotating axis of the starting rod and which is cut from a circle by a diameter parallel to said slit, and a void in the shape of a rectangle whose one side is the chord of this semicircle, its subtend lying in that sidewall having the slit,

10 said connect hole being distanced from the sidewalls by at least 50 mm except the side wall having the slit, and being wide enough to make a gap of at least 20 mm around the soot preform.

16. The apparatus of claim 14, wherein a core deposition burner is installed at the lower reaction chamber and a clad deposition burner is installed at the upper reaction  
15 chamber.

17. The apparatus of claim 14, wherein a center core deposition burner and a side core deposition burner are installed at the lower reaction chamber and a clad deposition burner is installed at the upper reaction chamber.

18. The apparatus of claim 16, further comprising a core heating burner installed  
20 at the lower reaction chamber.

19. The apparatus of claim 16, further comprising another clad deposition burner installed at the lower reaction chamber, adapted to function as a core heating burner as well, and disposed to deposit clad soot substantially in the upper reaction chamber.